

# TECHTORQUE NEWS

**Volume 3  
Issue 2**



1000 Series



1300 Series



YTC can be offered with Saa, Exd, Exia option.

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**VRC**

- True Modularity
- Corrosion Resistant Housing
- Encapsulated Electronics
- Universal Mounting

**Rotary & Linear Options**

Welcome to the third issue of our newsletter for 2006. Your feedback about our newsletters as well as your suggestions for any particular products or applications that you would like to read about is always welcome. With your input, we will do our best to provide you with informative and relevant reading matter. Please email your comments and requests to our Sales and Marketing Manager, Chris Hoare, at [choare@acrodyne.com.au](mailto:choare@acrodyne.com.au).

**New Product : Torque Overload Protector.**

ACRODYNE is pleased to announce the release of the Aunspach Torque Overload Protector that will complement our Limatorque range. Over torque protectors transmit at full operating torque, and if excessive torque is applied, the drive will disengage automatically to prevent equipment damage and downtime, thus eliminating repair and replacement costs. Re-engagement is automatic and operation is the same in either direction. There are many models that cater for gearboxes, AWWA valves, manual/electric actuators and close coupled to hand wheels to name but a few.

*If you are interested in more information or to have a power point presentation on this product emailed to you please contact us on (03)8727-7800.*



**June 2006 – Bruce Fellowes visits Beck / USA**

Bruce along with a gentleman from one of the major power stations here in Australia had the opportunity to visit the BECK Manufacturing / Engineering Plant in Newtown Pennsylvania. The visit gave Bruce the opportunity to show him the manufacturing process of the Beck Technology and an insight to what makes Beck such a unique product. During the week they were able to visit a number of Power Stations that have dealt with Beck over many years and literally saw hundreds of Beck installations that have been in "incident free" operation for decades. The second week Bruce spent on training and gaining information about new product releases and other relevant technical data that we will be featuring throughout the year.

*Call Bruce on (03)8727-7800 to discuss making Beck your solution for your valve and damper modulating needs.*



## Punctuality

Showing esteem for others by doing the right thing at the right time

- Begin Early - A strong start sets the stage for a strong finish
- Keep track of time - Some find it easy to become caught up in an activity and lose track of time.
- Prioritize your day - Schedules are only as good as those who make and keep them.
- Respect others' time - Your punctuality affects everyone around you.
- Finish on time - make the necessary adjustments when you see you cannot meet expectations.

**"Punctuality is the soul of business"**

*More information?*

Contact Philip Greenwood at People and Culture

Ph. (03) 9018 7971 [www.peopleandculture.com.au](http://www.peopleandculture.com.au) Mobile 0411 131 449

## *New People to Acrodyne*



Alex Grunwald joined us in May as our new Sales Assistant, and will be involved with all aspects of Office and Sales Administration from order entry to sales enquiries. Alex is 18 years old and lives with his parents in Kalorama, a suburb hidden away in Victoria's beautiful Yarra Ranges. Alex recently completed his VCE at Box Hill High School and his hobbies are singing in his band "Late for the Apocalypse" and lazing on the beach during summer (in Melbourne that equates to about 2 ½ weeks per year).

**Next Issue: Amalga Pneumatic Cylinder Tube**

# Gearboxes

Various types, applications, construction and the mechanics.

TECHTORQUE  
ARTICLE

**WORM GEAR ACTUATORS** are typically used for quarter turn applications e.g., butterfly valves, ball valves, plug valves, dampers and generally incorporate adjustable end stops as well as having the ability to provide a self-locking mechanism. Worm gear actuators can be used as a manual gearbox as well as being close coupled to multi-turn actuators (electric or pneumatic) for automated operation. Worm gear actuators can also be used on Weir gate applications offering multi-turn operation, self-locking ability and high ratio. Other types of applications are as a declutchable manual override typically used for emergency operation when used with a 90 degree pneumatic actuator when there may be an absence of air supply and the requirement to operate the valve.

*To correctly size a worm gear actuator there is some basic information that will be requested.*

- Maximum torque the actuator will be required to produce (normally referred to as break torque)
- Valve stem configuration (dimensions such as diameter, drive type, position of keyways etc)
- Keyway position and/or drive orientation e.g., clockwise movement produces clockwise or counter-clockwise output.
- Mounting base configuration, bolt size etc.
- Actuator grade or construction
- Environmental considerations
- Maximum allowable rim pull

Worm gear actuators are manufactured to perform various service conditions, commercial grade generally are for manual operation, typical construction is iron housing, covers and indicators, steel input shafts and worms and hardened thrust washers. Industrial grade are generally for motorised applications, construction features include hardened worm gear for increased cycle life and a motorised flange on the input for Adaption of an actuator. Another consideration is for modulating duty which generally incorporates aluminium bronze worm gear. Other types of service are buried or submersible, high and low temperature applications. Worm gear actuators have a multitude of optional equipment available such as Spur gear attachments, these are generally used to reduce the input torque required and can be used for manual and motorised applications, input stops are generally used on large buried service valves which provide for a positive stop at the input rather than the output or end stops, this protects the equipment from damage due to an overtorque condition. A relatively new addition to protection of equipment due to overtorque is the Aunspach Overload protector, this device does not require any adjustment other than setting of torque levels, does not require any maintenance and can be used directly onto valve stems. The Aunspach Overload protector simply disengages and automatically re-engages once the input torque is within the operating limits of the equipment.

**BEVEL GEAR ACTUATORS** are typically used for multi-turn applications, unlike the worm gear actuator the bevel gear actuator does not incorporate end stops. Bevel gear actuators can be specified to operate on non-rising or rising spindle applications where it is the requirement of the bevel gear operator to accept the thrust of the valve. The bevel gear actuator can be used in manual applications with a handwheel, generally actuators for these applications are classed as commercial grade service and do not include hardened gears or additional bearings at the input shaft. The stem nut for rising stem applications is normally manufactured of AB1 and screw cut to suit the valve stem thread form. The bevel gear actuator provides a mechanical advantage therefore reducing the torque or effort required to operate a valve, available in various ratios ranging anywhere from 2 to 8:1 reductions, a range of spur gear attachments are also available for applications requiring high output torques and a reduced input. For manual applications there is the option of a "Hammer-Blow" effect to assist in unseating sticky valves.

*Selection of bevel gear actuators are similar to that of the worm gear actuator and are typically:*

- Maximum torque the actuator will be required to produce
- Valve stem diameter, this is critical for rising spindle valves as the bevel gear actuator must be able to accept the maximum diameter of the valve stem.
- Input torque limitations
- Mounting base configuration, bolt size etc
- Actuator grade or construction
- Environmental considerations

The bevel gear actuator is also available for operation when close-coupled to an electric or multi-turn pneumatic actuator, this combination can provide substantial cost savings when compared to direct mounting an electric actuator, and this also provides the benefit of extended operation times for municipal applications. As with the worm gear actuator, the bevel gear actuator generally utilises hardened gearing as well as additional bearings to cope with added loads and extended operating cycles. The bevel gear actuator can be specified with various options, stem tube protection covers, various size handwheels, local position indicator and overload protection devices.



**69th Annual Victorian Water Industry  
Engineers and Operators Conference**

*Bendigo 6-7 September 2006*

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